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Review

A systematic review of the literature to support an evidence-based Precepting Program

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ABSTRACT

Aim: To provide a systematic review of the literature regarding development of an evidence based Precepting Program for nurses transitioning to burn specialty practice.
Background: Burned patients are admitted to specialty Burn Centers where highly complex nursing care is provided. Successful orientation and integration into such a specialized work environment is a fundamental component of a nurse's ability to provide safe and holistic patient care.
Design: A systematic review of the literature was performed for the period 1995 2011 using electronic databases within PUBMED and Ovid search engines.
Data sources: Databases included Medline, CINHAL, ProQuest for Dissertations and Thesis, and Cochran Collaboration using key search terms: preceptor, preceptee, preceptorship, precept*, nurs*, critical care, personality types, competency based education, and learning styles.
Review methods: Nurses graded the level and quality of evidence of the included articles using a modified 7 level rating system and the Johns Hopkins Nursing Quality of Evidence Appraisal during journal club meetings.
Results: A total of 43 articles related to competency ($n = 8$), knowledge acquisition and personality characteristics ($n = 8$), learning style ($n = 5$), preceptor development ($n = 7$), and Precepting Programs ($n = 14$).
Conclusions: A significant clinical gap existed between the scientific evidence and actual precepting practice of experienced nurses at the Burn Center. Based on this extensive review of the literature, it was determined that a sufficient evidence base existed for development of an evidence based Precepting Program.

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Contents

1. Introduction . . . 375
2. The review . . . 375
3. Results . . . 377
4. Discussion . . . 378
5. Conclusion . . . 385
Acknowledgements . . . 385
References . . . 385

1. Introduction

All world wide burned military casualties are transferred and admitted to the United States Army Institute of Surgical Research (USAISR), the regional verified Burn Center located at Fort Sam Houston, TX. The primary mission of the USAISR is to provide exceptional care to this unique patient population. Secondarily, pre deployment burn and/trauma training across all branches of military service is provided. Successful orientation and integration into a new work environment is a fundamental component of a nurse's ability to provide safe and holistic patient care [1,2]. When introduction of new staff members into the clinically demanding and high stress Burn Center environment fails to ensure baseline competence of the nurse, patient care suffers and nurse retention is compromised [3,4]. Skilled preceptors who are capable of both orienting new staff members while offering meaningful training experiences for civilian and military trainees are critical skills for the assigned nurses. Competence is pre sumed upon initial nursing licensure and continues unless actions or behaviors suggest otherwise [5]. However, upon assumption of a new role or upon entering a new specialty practice area, competence as defined by Benner, is diminished [6 8]. *Guidelines for Transitioning of the Experienced Nurse into a New Practice Setting* provided by the Texas State Board of Nursing [9] recommends the establishment of specific policies and procedures for incorporating the transitioning nurse into an unfamiliar role, development of preceptors to coach the incoming nurse during their transition period, and ongoing evaluation of the new nurse's performance. Also, from a national perspective, the 2011 Institute of Medicine report concerning the future of nursing recommended that residency programs be implemented for nurses transitioning into new clinical areas [10]. They cite a need to further develop skills in collaboration, systems orientation, and problem solving. The divide between academic learning and its application in practice settings is recognized, particularly when considering the impact of nurse competence on patient safety and outcomes for critical skill areas such as acute burn care.

Establishment of an evidence based nursing *Precepting Program* for skilled nurses who lack burn experience was deemed a priority for the Burn Center. The team actively participated in the initial steps of the Iowa Model of Evidence Based Practice (EBP) to Promote Quality Care (Fig. 1) [11]. Selection of this model to facilitate the EBP project was based on several factors: (1) the concepts and organization of the model are concise; (2) rapid assimilation of concepts is facilitated with diagrammatic representation of concepts; (3) the model is comprehensive and easy to use; (4) and the model is general and easy to apply to typical practice issues [12]. Because of the general utility of the Iowa Model, it was chosen as the Burn Center EBP model for all projects, which increased staff and team member familiarity with the concepts and systematic approach to implementing EBP practice change. The driving factors identified included ''problem focused triggers'' such as internal process improvement data about military and civilian nurse turnover, and ''knowledge focused triggers'' such as standards provided by the Texas Board of Nursing for expectations for transitioning nurses, and the lack of evidence to support the extant Nurse Precepting Program.

Within the 40 bed Burn Center, leaders identified the need for a standardized method of selecting, training, and evaluat ing preceptors for new staff members to facilitate role transition. Additionally, no consistent method for orienting new civilian or military nurses assigned to the burn environment existed. With short dwell times for military staff nurses, nursing turn over is relatively frequent for a specialty area such as burn care. As the sole Department of Defense Burn Center, military nurses assigned to the USASIR are not expected to have neither prior burn experience nor deemed competent to provide the multi faceted nursing support to arguably the most seriously injured of any patient population [13]. Progression from competency to proficiency in the Burn Center historically takes approximately 18 24 months for a nurse with an intensive care unit (ICU) background.

Nursing satisfaction was compromised by the lack of a comprehensive evidence based Precepting Program, which led to a proposed EBP project to implement a Precepting Program within the Burn Center. The ultimate goal was to reduce the incidence of staff nurse turnover within a demanding healthcare environment. Within the Iowa Model for implementing EBP lies the critical step of systematically evaluating the evidence.

2. The review

Aim. The purpose of this paper is to provide a systematic review of the literature regarding development of an EBP nursing Precepting Program for experienced nurses transi tioning to burn specialty practice.

Design. A systematic review of the literature was performed using electronic databases within PUBMED and Ovid search engines.

Search methods. Databases searched included Medline, CINHAL, ProQuest for Dissertations and Theses, and Cochran

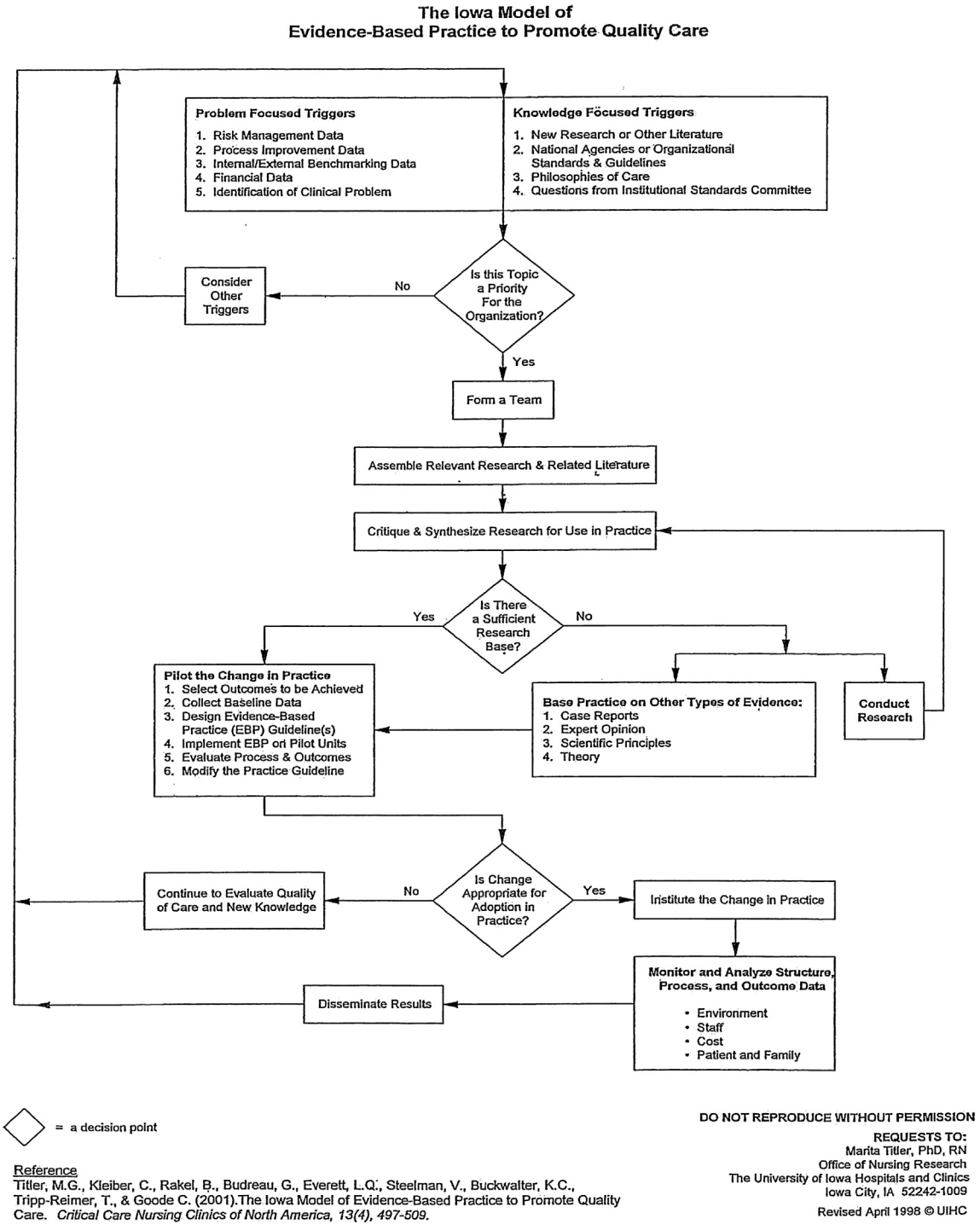

Fig. 1 – The Iowa Model.

Collaboration. The following key search terms and MeSH headings were used: preceptor, preceptee, preceptorship, precept*, nurs*, critical care, personality types, competency based education, and learning styles. Limiting terms included: ''NOT student'', ''NOT novice'' and NOT ''grad* or ''undergrad*'' because the focus of this review was for the experienced nurse in transition to a new work environment. Additional articles were identified using bibliographic/reference list hand searches. Further limits included: human, English language, trials, reviews, past 10 years, academic journals and field title/abstract. As noted, primary exclusion criteria were articles focused on students, new graduates, and published prior to 1995.

Quality appraisal. An EBP team was formed and journal club meetings were held for project team members to grade the level and quality of evidence of the included articles. Methodological quality was assessed using a modified 7 level rating scheme for evidence hierarchy [14] (Table 1). The Johns

Table 1 – Rating system for the hierarchy of evidence (modified by Melnyk and Fineour-Overholt, 2005 from Guyatt and Rennie, 2002 and Harris et al., 2001) [14].

Evidence rating	Evaluation criteria
Level I	Evidence from a systematic review or meta analysis of all relevant randomized controlled trials (RCTs), or evidence based clinical practice guidelines based on systematic reviews of RCTs
Level II	Evidence obtained from at least one well designed RCT
Level III	Evidence obtained from well designed controlled trials without randomization
Level IV	Evidence from well designed case control and cohort studies
Level V	Evidence from systematic reviews of descriptive and qualitative studies
Level VI	Evidence from a single descriptive or qualitative study
Level VII	Evidence from the opinion of authorities and/or reports of expert committees

Hopkins Nursing Quality of Evidence Appraisal [15] was used to evaluate each article for quality of research and non research evidence (Table 2). At least two team members evaluated each article and agreed on it's consideration for inclusion in the review. The detailed search and respective consort diagrams for key terms are provided as Fig. 2.

Data abstraction. Each article was placed in the major review sub groups by topic: preceptee, preceptor, preceptorship, personality types, competency, and learning styles. Overall themes from included articles were summarized.

Synthesis. A detailed evidence table was generated to synthesize the findings from each included article (Table 3).

3. Results

No articles were found that addressed precepting of nurses delivering care in a burn unit; therefore, precepting had to be examined from a more global or generic perspective to determine key aspects of such programs that could be extrapolated to burn nursing. A total of 43 articles were retained after title, abstract, and full text reviews (Fig. 2). A detailed evidence table is provided in Table 3. Of the selected articles, 24 were considered ''research''. Concerning the strength of evidence by category: Level IV 1, Level V 5, Level VI 23, Level VII 14 and quality of evidence was graded as A 13, B 29, and C 1 (the grade C was retained due to practical information regarding preceptor dissatisfaction). Selection criteria for articles published after 1995 were used to screen for recent articles. Although articles about precept ing have been published since the 1970s, they lacked the scientific foundation to be viewed as consistent with current, complex nursing practice. Therefore, a decision was made to focus on the papers that would provide evidence from which to build a relevant, evidence based Precepting Program. Several relevant reports were found from 1992 to 1995 and were also retained; the most recent article was published in 2011.

Articles related to ''competency'' (*n* 8) included topics such as general competency concepts [5,16 18], competency evaluation/validation [6,19], performance scoring [20], and development of clinical objectives [21]. Articles describing knowledge assessment and personality characteristics (*n* 8) included published reports about the Basic Knowledge Assessment Tool (BKAT) [22,23] and personality type determi nation instruments including the Keirsey Temperament Sorter [24 29], the Myers Briggs Type Indicator [26 30], and the Eysenck Personality Sorter [25]. Learning style articles (*n* 5) included recommendations to: avoid computer based learning for transitioning nurse orientation [31], recognize that matching Preceptor and Preceptee based on learning styles may be impractical [32,33], recognize generational differences when pairing Preceptee and Preceptor [34], and promote on the job learning [35].

Articles that addressed preceptor development (*n* 7) provided suggestions for preceptor selection criteria [36], barriers and stressors with strategies to overcome barriers in preceptor satisfaction or retention [37 39], and means to support and provide incentives for preceptors [40 42]. The literature regarding Precepting Programs (*n* 14) contained 7 primary themes: (1) systematic reviews [1,43]; (2) distinction between the concept of mentor and preceptor [44,45]; (3)

Table 2 – Johns Hopkins nursing quality of evidence appraisal [15].

Grade	Nomenclature	Definition for research evidence	For non research evidence
A	High	Consistent results, sufficient sample size, adequate control, and definitive conclusions; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific evidence	Expertise is clearly evident
B	Good	Reasonably consistent results, sufficient sample size, some control, and fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence.	Expertise appears to be credible
C	Low/major flaw	Little evidence with inconsistent results, insufficient sample size, conclusions cannot be drawn	Expertise is not discernable or is dubious

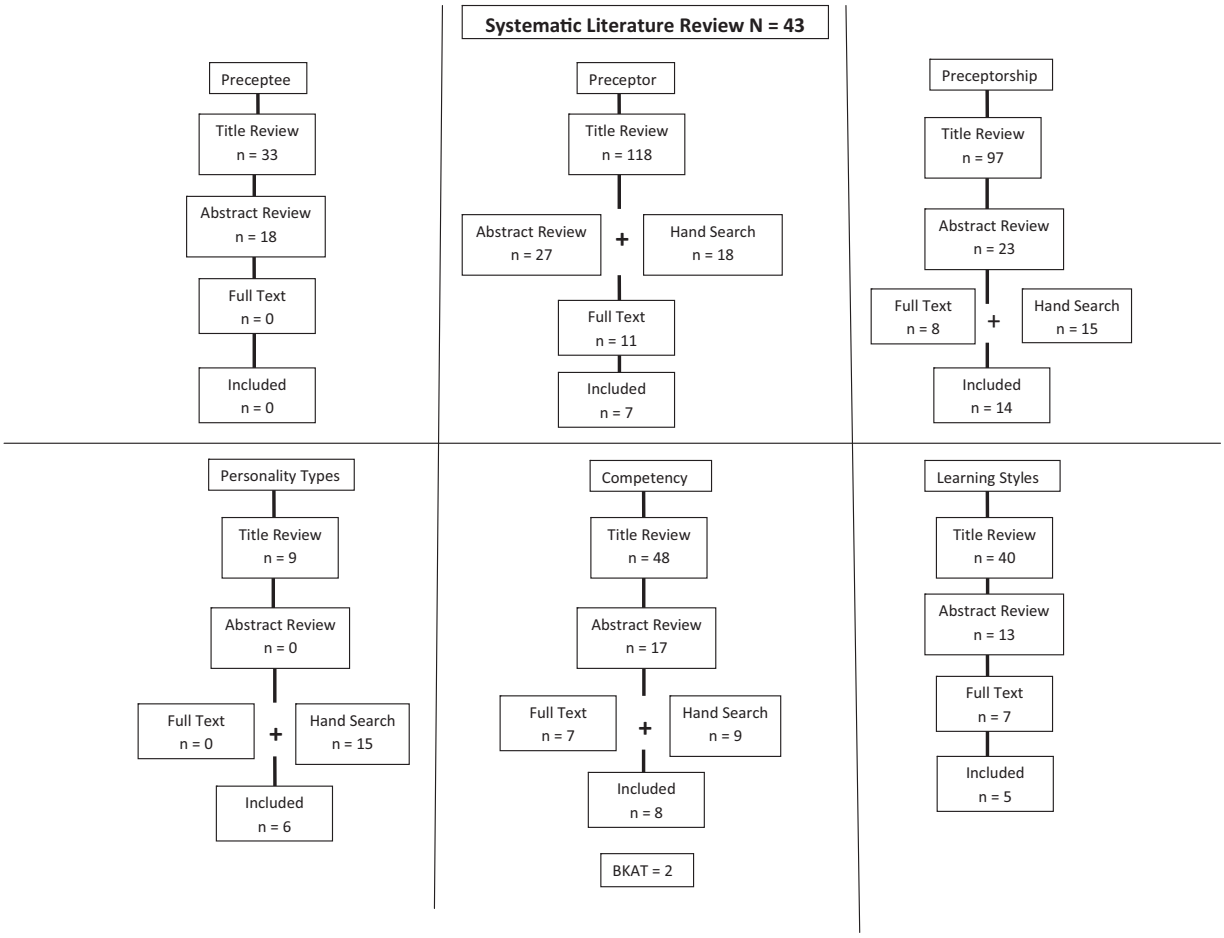

Fig. 2 – Consort diagrams and detailed search strategy from systematic review of the literature.

elements to consider when developing a program such as use of the Benner Novice to Expert model [8,46,47] or practice setting factors [48]; (4) suggestions for developing an online program [49] and general program descriptions [50 52]; (5) strategies for working with difficult behaviors [2,19]; (6) measures of preceptor confidence and comfort after partici pating in a preceptor development program [53]; and (7) effects of such a program on retention and patient centered outcomes [3,4].

4. Discussion

An effective evidence based nursing Precepting Program offers the potential to improve general staff competence by way of peer to peer influence [40]. The most critical compo nent of a comprehensive program is a motivated, trained and supported group of highly competent Preceptors [16,18,40 42]. Preceptors have a number of essential responsibilities to a new employee: serve as a role model, socialize the new nurse to the work environment, educate and coach, fairly and objectively evaluate performance, lead and influence, and serve as a protector and facilitator as the transitioning nurse becomes confident in a new clinical environment [16,20,48,54]. All of these elements mandate appreciation of the needs of an adult learner who may have a different personality type and learning style than the preceptor [24,30,32,33,35]. Provision of an evidence based training program for Preceptor develop ment provides benefit to the unit that can lead to reduced nurse turnover and greater job satisfaction [3,4]. The only truly comprehensive and research based Precepting Program dis covered in the literature is the Vermont Nurses in Partnership (VNIP) program [20,55], a face to face training opportunity that is preferred by experienced nurses when compared to computer based learning programs [31].

The literature supports that Preceptor selection should be based on a multi factorial process that incorporates clinical skill, strong interpersonal and communication ability, a positive attitude, and professionalism [16,18]. A weighted scoring system provides an objective measure of specific competencies in several domains to determine an individual's readiness to serve as preceptor [36]. The specific domains and weights include: nursing process (35%), interpersonal skills (25%), leadership skills (10%), teaching skills (20%), and professional attributes (10%); a minimum score of 80% was required for the individual to attend preceptor training [36].

Significant barriers to precepting success that must be avoided include: lack of perceived organizational support, lack of clear role expectations and guidelines, failure to acknowl edge contribution and sacrifice of preceptors, lack of adequate

Table 3 – Evidence tables from articles included from systematic review of the literature (NR, non-research; R, research).

Topic	Type of evidence	Strength of evidence	Quality of evidence	Title	Year	Author	Journal	Sample size/ adequate?	Method
Competency	R	Level VI	A = High	Hallmarks of unsafe practice and what preceptors know	2008	Luhanga, Yonge, Myrick [19]	J Nurs Staff Develop	22	Grounded theory
Competency	NR	Level VII	B = Good	Competence and innovation in preceptor development: updating programs	2008	Boyer [20]	J Nurs Staff Develop	NA	Review
Competency	R	Level VII	B = Good	An innovative education program: the peer competency validator model	2006	Ringerman, Flint, Hughes [18]	J Nurs Staff Develop	NA	Discussion of program
Competency	NR	Level VII	B = Good	Role of preceptor and nurse leader in developing ICU competency	2010	Elmers [16]	Crit Care Nurs Q	NA	Discussion
Competency	NR	Level VII	A = High	Measuring competence of health care providers	2001	Kak, Burkhalter, Cooper [17]	Quality Assurance Project	NA	Review
Competency	R	Level V	A = High	Competency education and validation in US: What nurses should know	2010	Sportsman [6]	Nursing Forum	NA	Review
Competency	NR	Level V	A = High	Competency in nursing: concept analysis	2008	Scott Tilley [5]	J Cont Ed in Nsg	NA	Review
Competency	NR	Level VI	B = Good	Clinical objectives: method for evaluation of clinical performance in the critical care unit	2004	McKane [21]	J Nurs Staff Develop	NA	Review
Instrument	R	Level VI	A = High	Relationship between Keirsey Temperament sorter and SF revised Eysenck Personality questionnaire (EPQSR)	2008	Francis, Craig, Robbins [25]	J Individ Difference	554	Compare KTS with EPQSR
Instrument	R	Level VI	A = High	Concurrent validity of the online version of the Keirsey Temperament Sorter II	2001	Kelly & Jugovic [27]	J Career Assess	203	Compare online LTS with MBTI
Instrument	R	Level VI	B = Good	Basic Knowledge Assessment Tool (BKAT) for critical care nursing: validity, reliability and replication	1994	Toth [22]	Crit Care Nurse	99: 14 centers	Compare score for cc experience and CCRN
Instrument	R	Level VI	B = Good	Follow up survey 10 years later: use of the BKAT for CC nursing and effects on staff nurses	2006	Toth [23]	Crit Care Nurse	139	Questionnaire: how is BKAT used, does it affect CC orientation?
Instrument	R	Level VI	B = Good	Correlations among 3 measures of personality types	1993	Tucker & Gillespie [29]	Perceptual and motor skills	103	Correlations between MBTI, KTS and please understand me
Instrument	R	Level VI	B = Good	Two different operationalisations of psychological type: comparing MBTI and KTS	2007	Francis, Robbins, Craig [26]	New Psychological Tests and Testing Research	554	Survey

Table 3 (*Continued*)

Topic	Type of evidence	Strength of evidence	Quality of evidence	Title	Year	Author	Journal	Sample size/ adequate?	Method
Instrument	R	Level VI	B = Good	The nursing profession, personality types and leadership	2002	McPhail [24]	Leadership in Health Services	94	Survey
Instrument	R	Level VI	B = Good	A cross correlation of the MBTI and KTS instruments	1992	Quinn, Lewis, Fischer [28]	J College Student Development	191	Survey/correlation
Learning Style	R	Level IV	B = Good	Experience RN Satisfaction with self learning modules	2007	Carcich, Rafti [31]	J Nurs Staff Develop	20	Satisfaction survey (validity/reliability provided) used PEI: small sample size
Learning Style	R	Level VI	B = Good	Impact of preceptor and orientee learning styles on satisfaction	2007	Brunt & Kopp [32]	J Nurs Staff Develop	22	2 learning styles questionnaires to preceptor and preceptee and satisfaction survey
Learning Style	NR	Level VII	B = Good	Learning styles: an issue in clinical education	2005	McDonough & Osterbrink [33]	Am Assn Nurs Admin	NA	Review/opinion of use of Kolb LSI
Learning Style	NR	Level VII	B = Good	Adapting teaching styles to accommodate learning preferences	2008	Eshleman [34]	Progress in Trans plant	NA	Review
Learning Style	R	Level VI	A = High	Development and validation of on the job learning styles question for nurses	2007	Berings, Poell, Simons, van Veldhoven [35]	J Adv Nurs	372	Questionnaire
Preceptorship Program	R	Level VI	C = Low/ Major Flaw	Developing the preceptor evaluation survey	2009	Moore [48]	J Nurs Staff Develop	22	Evaluate preceptor evaluation survey
Preceptorship Program	R	Level VI	B = Good	Masterful precepting: using the BECOME method to enhance clinical teaching	2007	Modic & Harris [2]	J Nurs Staff Develop	342	Survey develop BECOME framework
Preceptorship Program	R	Level IV	B = Good	Effects of a preceptorship program on turnover rate, cost, quality and professional development	2008	Lee, Tzeng, Lin, Yen [3]	J Clin Nursing	24	Post eval. (quasi exper. design) of preceptor program
Preceptorship Program	NR	Level VII	B = Good	Preparing preceptors with online education	2006	Phillips [49]	J Nurs Staff Develop	NA	Opinion
Preceptorship Program	NR	Level VII	B = Good	New hire/preceptor experience: cost benefit analysis	2005	Baggot, Hensinger, Parry [4]	JONA	NA	Review
Preceptorship Program	R	Level VI	B = Good	Effect of preceptor education workshop	2011	Sandau, Cheng, Pan, et al. [53]	J Continuing nursing Ed	131 preceptor; 53 orientee	Survey, pre/post workshop; measured orientee retention rates
Preceptorship Program	R	Level VI	A = High	Naturalistic study of a nursing education program	1994	Connelly [51]	Dissertation (see journal article)	NA	Qualitative study
Preceptorship Program	R	Level VI	A = High	A research based model of nursing orientation	1998	Connelly, Hoffart [52]	J Nurs Staff Develop	43	Qualitative study

Preceptorship Program	R	Level VI	A = High	Interpretive analysis of teaching and learning aspects of precepting	1995	Blazey [50]	Dissertation	8 preceptor; 8 orientee	Qualitative interviews
Preceptorship Program	NR	Level VII	B = Good	Enhancing staff development with a structured preceptorship program	2001	Hardy & Smith [30]	J Nursing Care quality	NA	Descriptive
Preceptorship Program	NR	Level V	B = Good	Preceptorship: a review of the literature	1996	Bain [43]	J Adv Nurs	NA	Review of literature
Preceptorship Program	NR	Level VII	B = Good	Contribution to theory development of preceptorship	2004	Billay & Yonge [45]	Nsg Ed Today	NA	Qualitative theory development
Preceptorship Program	NR	Level V	A = High	Preceptorship: an integrative review of the literature	2008	Billay, Myrick [1]	Nursing Ed in Practice	NA	Review $n = 313$ articles
Preceptorship Program	NR	Level VII	A = High	Hospital clinical preceptorship is essential preparation for success	2004	Baltimore [46]	J Cont Ed in Nsg	NA	A general discussion of preceptor preparation
Preceptorship Program	NR	Level VII	B = Good	Promoting effective teaching/ learning in a clinical setting	2006	Hand [47]	Nursing Standard	NA	General discussion, expert opinion
Preceptor	NR	Level VII	B = Good	Preceptor selection and evaluation: a tool for educators and managers	1993	Hartline [36]	J Nurs Staff Develop	NA	Review
Preceptor	NR	Level VII	B = Good	Becoming a super preceptor: a practical guide to preceptorship in today's clinical climate	2010	Barker & Pittman [37]	JAANP	NA	Review/opinion
Preceptor	R	Level VI	B = Good	Nurses perceptions of stress and support in the preceptor role	2007	Hautala, Saylor, O'Leary Kelley [38]	J Nurs Staff Develop	65	Descriptive convenience sample, questionnaire
Preceptor	R	Level VI	B = Good	Changes in preceptorship role perceptions of benefits, rewards, and support	2007	Hyrkas & Shoemaker [41]	J Advanced Nurs	82	Questionnaires × 4, compared 2 groups: precepting students and new hires
Preceptor	NR	Level V	B = Good	Staff nurse experiences as preceptors and mentors: review	2010	Omansky [39]	J Nursing Management	NA	Review
Preceptor	R	Level VI	A = High	Investigation of preceptors perception of benefits, rewards, supports to preceptor role	2005	Moran [42]	Dissertation		Observational
Preceptor	R	Level VI	B = Good	Recognizing and rewarding nurse preceptors in critical care	2003	Alspach [40]	Crit Care Nurse	80	Survey national sample but low response rate

Topic	Type of evidence	Results	Similarities/differences	Unknown factors, risk issues, and resource issues	Parts of issue this article pertains to	Recommendations we should consider
Competency	R	Behaviors: lack of skill/ knowledge; unprofessional; poor communication; attitude problems	Student focus	Applicability to experienced nurses	Warning signs occur early; preceptee competency evaluation	Measure preceptor comfort/ confidence pre/post; retention

Table 3 (*Continued*)

Topic	Type of evidence	Results	Similarities/differences	Unknown factors, risk issues, and resource issues	Parts of issue this article pertains to	Recommendations we should consider
Competency	NR	Standardized research and theory based preceptor instruction and support	Student/intern nurse		Performance scoring	Performance scoring (Vermont nurse internship program)
Competency	R	CBO includes: skill, critical thinking, interpersonal components	General application		Competency	Include all 3 components in CBO assessment
Competency	NR	4 factors for success: leadership, preceptor selection, critical thinking skills, CBO	General ICU		Competency	Ensure all 4 elements for success are included in program
Competency	NR	Factors assessing provider competence	General application		Competence	General overview of concepts related to competency assessment
Competency	R	Suggestions for CBO	Address needs of experienced nurse in new clinical role		Competency validation	Benner model for new role**
Competency	NR	Attributes of the learning environment	General review		General description of competency	Attributes of competency
Competency	NR	Recommendations for competency evaluation	Critical care environ	Limited references more expert opinion	Clinical objectives	Examples of objectives
Instrument	R	KTS maps in a complex way to EPQRs	Under grads		Instruments	KTS concurrence with other reliable/valid personality test
Instrument	R	Strong correlation between KTS and MBTI; provided psychometric data on KTS	Under grads	KTS not widely validated as MBTI	Instruments	KTS mirrors MBTI and is available to us (MBTI is not); psychometrics
Instrument	R	Increase score with experience and CCRN	ICU nurses	Only 7 US states, small sample	Instruments	Appropriate tool to evaluate baseline CC knowledge
Instrument	R	Volunteer sample conclusions were not supported by results: use of tool altered orientation program	Critical care setting, similar use of tool to assess knowledge		Instrument	Appropriate tool to evaluate baseline CC knowledge
Instrument	R	Result c/w hypothesis that MBTI and Keirsey sorters are measuring same constructs	Cannot use MBTI due to licensing/strict requirements	Abstract	Personality type	KTS is similar to MBTI and is publically available
Instrument	R	Strong correlation b/t tools for personality; not for type indication	Under grad students	Applicability	Personality type	Use of KTS for personality will mirror MBTI (gold standard but not an option)
Instrument	R	Temperament among 4 nursing tracks: bedside, admin, teach, research	Nurses		Personality type	Can compare our nurses temperament scores with a different cohort
Instrument	R	Correlation good between 2 instruments	Business admin students	Abstract/incomplete data	Personality type	KTS can be used in place of MBTI for "type" determination

Learning Style	R	Preferred traditional learning (classroom) versus self paced computer learning	Experienced nurses, not students	0	Learning style	Avoid computer learning when possible
Learning Style	R	Knowledge of learning style can impact satisfaction and preceptor experience, perhaps increase retention	Inpatient nursing setting not described	Satisfaction was measured with self developed tool	Matching preceptee with preceptor based on learning style	Reconsider if matching should be goal rather use for awareness: not clear about effect on retention
Learning Style	NR	Educational success not dependent on adapting to learner preferences	CRNA population	Source references not in English	Matching based on learning styles	Furthers argument that matching not as important as recognizing differences
Learning Style	NR	Consider adult learner, generational differences 0	Adult learners, addresses generational differences, technology, learning style	NA	Learning style	Generational differences in paring preceptor with preceptee
Learning Style	R	Ways of learning on the job	Inpatient nurses, Dutch hospitals only, RNs	0	Learning styles	Ways of on the job learning
Preceptorship Program	R	Development of evaluation instrument	Content experts and clinical nurse preceptors	Dr Moore gave permission to use entire tool	Precepting program	Validated and reliable tool for evaluating preceptee experience and program****
Preceptorship Program	R	Usefulness of BECOME framework for precepting program	Generally applicable to all preceptors		Preceptorship	Strategies for difficult behaviors
Preceptorship Program	R	Significant decrease in turnover/med errors/adverse events/falls; increased satisfaction	General nursing		Precepting program	Evaluate turnover, costs of turnover, medication errors
Preceptorship Program	NR	Advantages and disadvantages and how to develop an online preceptor program	Global training program	Specific program not provided	Online preceptor program	Ideas for how to if online program selected.
Preceptorship Program	NR	Association between strong preceptor development and retention and satisfaction of nurses	General community hospital settings		Retention, long term benefits of precepting program	Cost benefit analysis; info on national turnover rate
Preceptorship Program	R	Increase comfort/confidence in preceptors who attended workshop/preceptee retention improved in year after workshop	Preceptor workshop	Type of workshop (self developed?)	Effects of preceptor workshop on preceptor and preceptee retention	Measure preceptor comfort/ confidence pre/post; retention
Preceptorship Program	R	Description of precepting program	General nursing		Preceptorship program outline	Program outline
Preceptorship Program	R	Provides model of orientation program	General nursing units	Applicability	Program model	Organizational aspects orientation, educational and managerial requirements
Preceptorship Program	R	3 themes: teaching domains; tact of precepting; journey to independence	General nursing	0	Precepting program content	Themes a/w precepting, esp. tact and journey toward independence
Preceptorship Program	NR	Described development of structured precepting program	Use of MBTI to asses learning style	Self developed program	0	Matching MBTI affords opportunity to explore own style

Table 3 (*Continued*)

Topic	Type of evidence	Results	Similarities/differences	Unknown factors, risk issues, and resource issues	Parts of issue this article pertains to	Recommendations we should consider
Preceptorship Program	NR	Lack a clear definition of skills required by preceptor; definition of preceptorship; efficacy of program contrasting evidence	General nursing	0	Preceptor preparation important and variable	Support for skills requirement; criteria for preceptor; may have to be empirically derived
Preceptorship Program	NR	Expectations and behaviors a/w preceptorship	Focus on students		Difference between preceptor and mentor	Definitions
Preceptorship Program	NR	# Articles published to date, some details of types of study designs in literature	General nursing		Implications to practice may be useful	Need to clearly define our concepts/definitions****
Preceptorship Program	NR	Suggestions especially using Benner model; importance of socialization for preceptee	Student focus but applicable to experienced nurse		Elements to consider when developing program	Benner model***** orientee characteristics and preceptor implications
Preceptorship Program	NR	Clinical learning opportunities and characteristics of good students/teacher	General nursing		Characteristics of good teacher; clinical learning opportunities	Benner model***** orientee characteristics and preceptor implications
Preceptor	NR	Provides qualification and selection criteria for preceptors	General nursing		Preceptor selection	Useful criteria for preceptor selection
Preceptor	NR	Practical suggestions for precepting program	General nursing		Preceptor	Barriers and strategies to consider
Preceptor	R	Some degree of stress a/w increased workload: perceived support from peers/supervisors important	Precepting new hires		Preceptor support	Preceptors cannot take increased patient load, impt. to acknowledge extra work of precepting, desire more recognition
Preceptor	R	Perceived less support when precepting new hires compared to students	New hires	Specific means of support	Support/recognition for preceptors	Support for preceptors essential
Preceptor	NR	Addresses role ambiguity/ conflict of preceptors, work overload	Student nurse preceptees	Applicability in our setting	Stressors for preceptors	Formalize preceptor role, recognition, address stressors
Preceptor	R	Qualitative	General nursing		Preceptor recognition	Benefits, support, rewards for precepting new hires v students
Preceptor	R	Positive and negative incentives for preceptors	Critical care nurses	Currency of findings	Incentives for preceptors	Incentives for preceptors

preceptor preparation, and lack of ''time to teach'' [38]. Preceptors report role conflict when formal recognition for efforts is lacking, role ambiguity when job descriptions lack clarity, and role overload when assignments are not made thoughtfully for the additional time to effectively teach [39].

Methods to assess competence in both the preceptor and preceptee should be multi pronged and evidence based, but couched in a period of perceived support while the new role transition is occurring and mastery in the clinical area is achieved [6]. Observation, simulation, case studies, and discussion are methods for measuring skills and knowledge incorporation, yet there should be congruence with the actual performance of the job expectations as a final measure of competency [17]. Because healthcare workers acquire compe tence over time, achieving independent function may be classified as minimally competent with the understanding that the continuum of learning must progress over many more months for true competence or proficiency in a specialty area [20].

Sustainment of preceptors over time is the responsibility of clinical leaders and Clinical Nurse Specialists to ensure continued program success [16,41]. In the literature, precep tors reported a desire for meaningful recognition, adequate preparation and time, with clear role expectations and appropriate work load [39 41]. It is therefore, reasonable to expect the organization to provide these fundamental components.

Creation of an evidence based Precepting Program for the Burn Center was a collaborative process among staff nurses of various educational levels, advanced practice nurses, and doctorally prepared nurses. Each team member brought a unique perspective to this process, enhancing the practical application of the literature review findings into clinical practice. The literature review was enhanced through a Journal Club approach that was intended to both critically appraise the evidence as well as educate project team members, who lacked formal training in the systematic review process. Such an approach lends strength to the conclusions for guiding a transition in practice environment through an EBP Precepting Program.

5. Conclusion

A significant clinical gap existed between the scientific evidence and actual precepting practice of experienced nurses at the Burn Center. No articles about precepting nurses new to burn care exist in the literature. Based on this extensive review of the literature it was determined that a sufficient evidence base exists for development of an evidence based Precepting Program, which is now underway. Although no formal clinical practice guideline (CPG) exists, the available research and published expert opinions provided adequate support for the pilot Burn Center Precepting Program now in the first year of implementation. Furthermore, evidence based VNIP consult ing and implementation services offered the opportunity to develop a program consistent with one of the most established nationally recognized precepting programs while allowing unit specific changes to best fit a unique clinical practice environment [20,55]. The Burn Center Precepting Program EBP project will continue to follow the Iowa Model [11]. The next steps include: piloting the change in practice, determining if the change is appropriate for full adoption into practice, and if so, instituting a sustained change, monitoring outcomes, and disseminating results. The strength of this endeavor resides in the strong foundation of evidence evaluation used to develop this comprehensive evidence based Burn Center Precepting Program and the expertise of team members who represent key organizational and system interests.

Conflicts of interest

No conflicts of interest have been declared by the authors.

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